Trigonometry

$\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$

$\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$

$\sin(A+B)\sin(A-B) = \sin^2 A - \sin^2 B$

$= \cos^2 B - \cos^2 A$

$\cos(A+B)\cos(A-B) = \cos^2 A - \sin^2 B$

$= \cos^2 B - \sin^2 A$

$\tan(A \pm B) = \dfrac{\tan \pm \tan B}{1 \mp \tan A \tan B}$

$\cot(A \pm B) = \dfrac{\cot A \cot B \mp 1}{\cot B \pm \cot A}$

$\sin C + \sin D = 2 \sin \dfrac{C+D}{2} \cos \dfrac{C-D}{2}$

$\sin C - \sin D = 2 \cos \dfrac{C+D}{2} \sin \dfrac{C-D}{2}$

$\cos C + \cos D = 2 \cos \dfrac{C+D}{2} \cos \dfrac{C-D}{2}$

$\cos C - \cos D = 2 \sin \dfrac{C+D}{2} \sin \dfrac{D-C}{2}$

$\sin 3A = 3 \sin A - 4 \sin^3 A$

$\cos 3A = 4 \cos^3 A - 3 \cos A$

$\sin 2A = \dfrac{2 \tan A}{1 + \tan^2 A}$

$\cos 2A = \dfrac{1 - \tan^2 A}{1 + \tan^2 A}$

$\tan^2 A = \dfrac{1 - \cos 2A}{1 + \cos 2A}$

$\cos 2A = \cos^2 A - \sin^2 A$

$1 + \cos 2\theta = 2\cos^2\theta$

$1 - \cos 2\theta = 2\sin^2\theta$

$$\tan 3\theta = \frac{3\tan\theta - \tan^3\theta}{1 - 3\tan^2\theta}$$